

A lifecycle approach to landscape design means replacing the traditional linear approach to single use of resources with a circular approach that keeps materials and services in continued circulation.

Linear v Circular Approach

A linear approach to landscape design involves extraction, processing, manufacture, transportation and construction, followed by disposal at the end of the material's lifespan or the end of the project. In a planet with finite resources, the single use of materials is leading to shortages and contributing to our global carbon footprint. A circular approach to landscape design looks to firstly, avoid or minimise the use of resources, secondly, reuse materials that are already in circulation, and thirdly, plan for reuse or recycle of materials at the end of their lifespan or the project.

0 Strategic Definition

1 Preparation and Briefing

Ensure the lifecycle of materials is core to the design - use reused and recycled, and ensure reuse and recycling. Use carbon calculations to understand carbon impacts of lifecycle from outset.

2 Concept Design

3 Spatial Coordination 4 Technical Design

Design in low carbon specification with priority for reused, recycled and locally sourced materials, considering the lifespan of these materials and their capacity for reuse, repurpose or recycling at the end of their lifespan or end of the project. Use carbon calculations to demonstrate carbon impacts from cradle to grave.

5 Construction

6 Handover

Design specifications and construction practices to extend the longevity of hard and soft landscape design.

7 Use

Design aftercare and repair during the operational phase to extend the longevity of hard and soft landscape design.

8 End-of-life

Plan for soft landscapes and soils to remain in-situ to create a legacy landscape and plan for hard landscapes to either remain in-situ or be disassembled for reuse, repurposing or recycling.



Measuring Carbon

A lifecycle approach to landscape design requires the ability to measure carbon impacts from cradle to grave, with the tools for predominantly hard landscape projects being more advanced than those for soft landscape projects. OneClick LCA and EC3 only cover hard landscape design and not soft landscape design and OneClick LCA also comes at a cost.

Pathfinder, Climate Conscious App and Elemental cover both hard and soft landscape design, with the former two taking into account the carbon sequestration of the soft landscaping over the lifetime of the project and all three including the carbon impact of installation.

Carbon Conscious App is especially recommended for the early stages of a project and with Pathfinder and Elemental providing a greater level of detail at the design stage. The accuracy and range of all these tools is determined by the EPD data available which is currently limited but constantly improving.

Carbon Data and Tools for Lifecycle Assessment:

[One Click LCA](#)

[Elemental](#)

[Pathfinder](#)

[Carbon Conscious App](#)

Hard Landscape Design

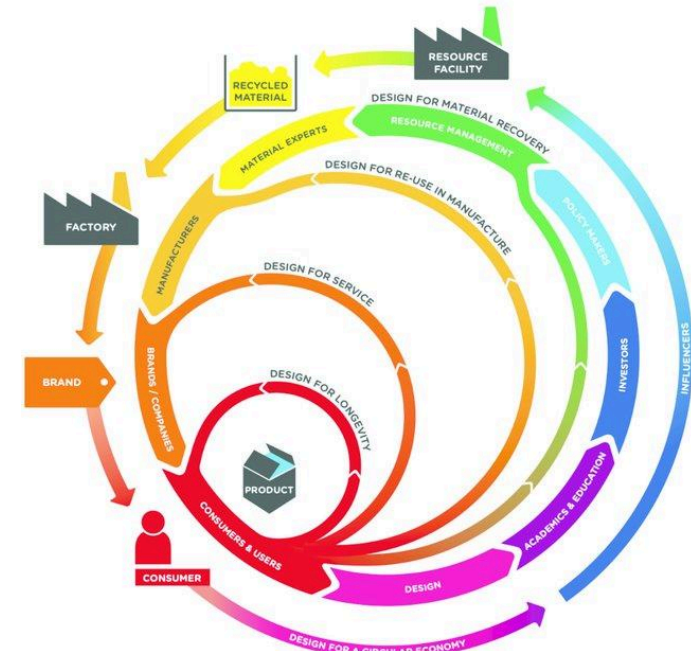
Smart design can enable the circular economy by simplifying the processes of repair, reuse and recycling in the following ways.

- Use material passports to provide a record of all the materials used in a project, stating type, specification, dimensions, longevity, reusability, recyclability and other relevant information.
- Use of standard dimensions, use of large dimensions and use of modular systems will increase options for reuse and repurposing of materials.
- Use of materials that have the versatility to be reused or recycled, for example timber and paving slabs have greater potential than steel and concrete and will have a lesser carbon impact in the processes involved.
- Use methods of fixing and fastening that enable materials to be easily disassembled, for example using screws rather than adhesives for timber and using soft beds instead of cements for paving.
- Lifecycle considerations should also include the durability and longevity of materials which may make higher carbon specifications the lowest carbon option over time.

Soft Landscape Design

There are a number of ways in which the design of soft landscapes can increase lifespans and circularity.

- Select trees, shrubs and other plants which have long lifespans, thus avoiding the need for frequent replacement of planting.
- Design planting to allow for natural regeneration and succession, reducing the need for replacement planting and increasing self-sustenance.
- Design planting that is naturally low maintenance, for example by minimising formal lawn that requires cutting seven times a year and maximising hay meadows that require cutting once a year.
- Ensure there is sufficient space for plants to grow to and beyond full maturity, reducing need for ongoing maintenance and removal of overcrowded species.
- Inbuild maintenance operations that minimise waste, for example by recycling organic waste on-site to make compost.
- Consider how long-term planting can create a legacy landscape with inbuilt adaptability to accommodate changing uses on the site.



Links to information on lifecycle assessment:

PowerPoint Presentation Role of Landscape Architects in the Circular Economy and Climate Change
 Built environment and the circular economy
 Net Zero Whole Life Carbon Roadmap | UKGBC
 Life cycle assessment (LCA) with Ecochain
 RIBA The Re-use Atlas A Designers Guide

